## AMENDMENTS TO THE CLAIMS

1.    (Original)  A method in a computer system for providing help information for a computer program, the method comprising:

   providing a hierarchy of program element types, each program element type having associated help information;

   providing a program tree representation of the computer program, the program tree having program elements, each program element having a program element type;

   receiving from a user an indication to provide help information for a selected program element;

   identifying ancestor program element types of the selected program element;

   displaying to the user an indication of each identified ancestor program element type; and

   upon receiving a selection of a displayed ancestor program element type, displaying to the user help information associated with the selected ancestor program element type.

2.    (Original)  The method of claim 1 wherein the displaying to the user of an indication of each ancestor program element type includes displaying naming information associated with a program element type.

3.    (Original)  The method of claim 1 wherein the help information associated with a program element type is stored as an attribute of a node representing the program element type.

4.    (Original)  The method of claim 1 wherein program element types are stored in schemas defining valid program trees at different levels of abstraction.

5.      (Original)  The method of claim 4 wherein a schema is represented as a tree data structure.

6.      (Original)  The method of claim 4 wherein each program element type is represented as a node within a tree.

7.      (Original)  The method of claim 1 wherein the ancestor program element types are specified by isa relationships, starting at the selected program element.

8.      (Original)  The method of claim 1 wherein an ancestor program element type includes a program element type defined in the program tree.

9.      (Original)  A method for providing help information for a computer program, the method comprising:

> providing a specification of program element types, a program element type being defined as a specific instance derived from a more general program element type, program element types having associated help information;
>
> providing a computer program with program elements, each program element having a program element type;
>
> receiving from a user an indication to provide help information for a selected program element;
>
> identifying a derivation of program element types for the selected program element;
>
> displaying to the user an indication of program element types in the identified derivation; and
>
> upon receiving a selection of a displayed program element type, displaying to the user help information associated with the selected program element type.

10.    (Original)  The method of claim 9 wherein the displaying to the user of an indication of each program element type includes displaying name information associated with a program element type.

11.    (Original)  The method of claim 9 wherein the help information associated with a program element type is stored as an attribute of a node representing the program element type.

12.    (Original)  The method of claim 9 wherein program element types are stored in schemas defining valid computer programs at different levels of abstraction.

13.    (Original)  The method of claim 9 wherein program element types are stored as definitions within the computer program.

14.    (Original)  The method of claim 9 wherein a program element type that is a specific instance of a more general program element type is defined by an isa relationship.

15.    (Original)  A method for providing information for a computer program, the method comprising:
      providing a hierarchy of schemas defining valid computer programs, each schema
            specifying program element types at different levels of abstraction;
      providing a computer program with program elements, each program element
            having a program element type;
      identifying a derivation of program element types for a program element of the
            provided computer program from the provided hierarchy of schemas; and
      displaying an indication of program element types in the identified derivation.

16. (Original) The method of claim 15 wherein the identifying of a derivation is performed in response to a user selecting a program element of the provided computer program.

17. (Original) The method of claim 15 including upon receiving a selection of a displayed program element type, displaying the information associated with the selected program element type.

18. (Original) The method of claim 15 wherein the displaying to the user of an indication of each program element type includes displaying name information associated with a program element type.

19. (Original) The method of claim 15 wherein the information associated with a program element type is stored as an attribute of the program element type.

20. (Original) The method of claim 15 wherein a program element type is stored as a definition within the computer program.

21. (Original) The method of claim 15 wherein a program element type that is a specific instance of a more abstract program element type is specified by an isa relationship.

22. (Original) A computer system for providing help information for a computer program, comprising:

    a data structure storing a hierarchy of schemas defining computer programs, each schema specifying program element types of a computer program at different levels of abstraction;

    a store within a computer program having program elements, each program element having a program element type;

a component that identifies a derivation of program element types for a program element of the computer program from the stored hierarchy of schemas;

a component that displays an indication of program element types in the identified derivation; and

a component that displays information associated with a program element type selected from the displayed indication of program element types.

23.    (Original)   The computer system of claim 22 wherein the identifying of a derivation is performed in response to a user selecting a program element of the computer program.

24.    (Original)   The computer system of claim 22 wherein the displaying to the user of an indication of program element types includes displaying name information associated with a program element type.

25.    (Original)   The computer system of claim 22 wherein the information associated with a program element type is stored as an attribute of the program element type.

26.    (Original)   The computer system of claim 22 wherein a program element type is stored as a definition within the computer program.

27.    (Original)   The computer system of claim 22 wherein a program element type that is a specific instance of a more abstract program element type is specified by an isa relationship.

28.    (Original)    A    computer-readable    medium    containing    instructions    for controlling a computer system to provide information for a computer program, by a method comprising:

 providing a computer program having program elements, each program element having a program element type, the program element types being defined by a hierarchy of schemas specifying program element types at different levels of abstraction;

 identifying a derivation of program element types for a program element of the provided computer program from the hierarchy of schemas;

 displaying an indication of program element types in the identified derivation; and

 displaying information associated with a program element type selected from the displayed indication of program element types.

29.    (Original)  The computer-readable medium of claim 28 wherein the identifying of a derivation is performed in response to a user selecting a program element of the computer program.

30.    (Original)    The    computer-readable    medium    of    claim    28    wherein    the information associated with a program element type is stored as an attribute of the program element type.

31.    (Original)  The computer-readable medium of claim 28 wherein a program element type is stored as a definition within the computer program.

32.    (Original)  The computer-readable medium of claim 28 wherein a program element type that is a specific instance of a more abstract program element type is specified by an isa relationship.

33.    (Original)  A method for providing help information for a computer program, the method comprising:

providing a program tree representation of the computer program, the program tree having program elements;

specifying a programmatic relationship for program elements of the program tree;

identifying a derivation for a program element based on the specified programmatic relationship; and

displaying information associated with the identified derivation.

34.    (Original)  The method of claim 33 wherein the programmatic relationship is based on program trees representing the computer program with different levels of abstraction.

35.    (Original)  The method of claim 33 wherein the programmatic relationship is based on the hierarchy of operators and operands in the program tree.

36.    (Original)  The method of claim 33 wherein the programmatic relationship is based on the organization of the computer program.

37.    (Original)  The method of claim 33 wherein the derivation includes a list of program elements representing the programmatic relationship.

38.    (Original)  The method of claim 33 wherein the displayed information includes an indications of the programmatic relationships.

39.    (Original)  The method of claim 38 wherein when a user selects an indication of a programmatic relationship, displaying help information associated with the selected programmatic relationship.

40.    (Original)  The method of claim 33 wherein the displayed information includes help information associated with the programmatic relationships.

41.    (Original)  The method of claim 33 including identifying program elements related to the program element for whom the derivation is identified and wherein the displaying includes displaying help information associated with the related program elements.

42.    (Original)  A method for providing help information for a computer program, the method comprising:

    providing a program tree representation of the computer program, the program tree having program elements;

    providing a hierarchical programmatic relationship for program elements of the program tree;

    receiving from a user a selection of a program element of the program tree;

    identifying a derivation of the provided hierarchical programmatic relationship for the identified program element; and

    displaying to the user the identified derivation;

    receiving from user a selection of programmatic relationship of the displayed derivation;

    retrieving help information associated with the selected programmatic relationship; and

    displaying to the user the retrieved help information.

43.    (Original)  The method of claim 42 wherein the programmatic relationship is based on program trees representing the computer program with different levels of abstraction.

44.    (Original)  The method of claim 42 wherein the programmatic relationship is based on the hierarchy of operators and operands in the program tree.

45.    (Original)  The method of claim 42 wherein the programmatic relationship is based on the organization of the computer program.

46.    (Original)  The method of claim 42 including identifying program elements related to the selected program element wherein the displaying includes displaying help information associated with the related program elements.